## REMARKS

**STATUS OF CLAIMS:**

Claims 1-18 are all of the claims currently pending in this application. Claims 1-18 have been examined.

**35 U.S.C. §112:**

Claims 1-18 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite. The Examiner asserts that the language of the claims does not point out the invention because it does not set forth structural distinctions over the prior art. In particular, the Examiner opines that one of the points of novelty appears to be expressed in terms of an operation (the Examiner points to the last paragraph of claim 1, for example), which the Examiner asserts is improper for an apparatus claim. Applicants hereby amend independent claims 1 and 16 to recite these features using means-plus-function language.

The Examiner also alleges that in claim 2, line 2, the "porous body having a bore diameter in a range of 0.01 m to 1 m," is indefinite because it is unclear if the claim calls for the entire porous body to have a diameter in this range or whether the porous body has pores with each pore having a diameter in this range. Accordingly, claim 2 is hereby amended to clarify that the pores have the defined size.

The Examiner also asserts that claim 5 does not appear to be properly dependent from claim 4. Applicants hereby amend claim 5 to depend from claim 3.

**35 U.S.C. §102:**

Claims 1, 7-14, 16 and 17 are rejected under 35 U.S.C. §102(b) as being anticipated by or, in the alternative, under 35 U.S.C. §103(a) as being obvious over Japan 05-087773 (hereinafter "'773"). Applicants respectfully traverse this rejection in view of the following remarks.

The claimed feature regarding the gas diffusion control is recited by using means-plus-function language. Accordingly, the function of this feature is to be accorded patentable weight. Applicants respectfully submit that '773 does not teach the recited means for controlling a gas diffusion of the measurement gas and its related functions, as described in amended claims 1 and 16.

More specifically, the claimed gas diffusion control means for controlling a gas diffusion of the measurement gas can control the gas diffusion in such a manner that the pumping current varies, which is not taught or suggested in '773.

In contradistinction, '773 discloses a gas sensor capable of measuring concentrations of at least two kinds of gasses at the same time. However, '773 does not teach or suggest detecting the pressure of the gas, as in the presently claimed invention.

Accordingly, the rejection of claims 1 and 16 under 35 U.S.C. §102(b), and the alternative rejection under 35 U.S.C. §103(a), should both be withdrawn. Also, the rejection of dependent claims 7-14 and 17 under 35 U.S.C. §102(b) and under 35 U.S.C. §103(a) should be withdrawn at least by virtue of these claims depending on independent claims 1 and 16, in addition to their individual recitations.

**35 U.S.C. §103:**

- Claims 1-4, 7-14, 16 and 17 are rejected under 35 U.S.C. §103(a) as being unpatentable over '773 in view of Friese et al. (U.S. Patent No. 5,368,713 [hereinafter "Friese"]).

Applicants respectfully traverse this rejection in view of the following remarks.

Rejections under 35 U.S.C. §103 are proper only when each feature recited in the claims would have been taught or suggested by the combined references. The combination of '773 and Friese would have failed to teach or suggest each feature recited in amended claims 1 and 16.

The Examiner relies on Friese for an alleged disclosure of a diffusion body 12 with pores 13 that have diameters as low as 0.2 microns. Applicants respectfully submit that the application of the diffusion body 12 of Friese fails to make up for the deficient teachings of '773 in regard to amended claims 1 and 16. Accordingly, the rejection of claims 1 and 16 under 35 U.S.C. §103(a) should be withdrawn. Also, the rejection of dependent claims 2-4, 7-14 and 17 under 35 U.S.C. §103(a) should be withdrawn, at least by virtue of these claims depending on independent claims 1 and 16, in addition to their individual recitations.

- Claims 15 and 18 are rejected under 35 U.S.C. §103(a) as being unpatentable over '773 with or without Friese, and in view of Kato et al. (U.S. Patent No. 5,866,799 [hereinafter "Kato"]).

- Claims 5 and 6 are rejected under 35 U.S.C. §103(a) as being unpatentable over Japan '773 in view of Friese et al. and Radford et al. (U.S. Patent No. 3,843,400 [hereinafter "Radford"]).

- Claims 3 and 4 are rejected under 35 U.S.C. §103(a) as being unpatentable over Japan '773 in view of Friese et al. and Kimura et al. (U.S. Patent No. 4,224,113 [hereinafter "Kimura"]).

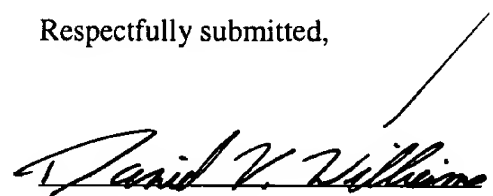
- Claims 5 and 6 are rejected under 35 U.S.C. §103(a) as being unpatentable over Japan '773 in view of Friese et al., Kimura et al. and Radford et al.

Applicants respectfully submit that the application of the secondary references of Kato, Radford and Kimura fail to make obvious the deficient teachings of the primary references ('773 and Friese) in regard to independent claims 1 and 16. Accordingly, the rejections of claims 3-6, 15 and 18 under 35 U.S.C. §103(a) should be withdrawn.

In view of the preceding amendments and remarks, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephonic interview, the Examiner is kindly requested to contact the undersigned attorney at the local telephone number listed below.

The USPTO is directed and authorized to charge all required fees (except the Issue Fee and/or the Publication Fee) to our Deposit Account No. 19-4880. Please also credit any over-payment to said Deposit Account.

Respectfully submitted,



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## APPENDIX

## VERSION WITH MARKINGS TO SHOW CHANGES MADE

**IN THE SPECIFICATION:**

**The specification is changed as follows:**

**Page 8, second full paragraph:**

The gas diffusion control 9 is formed with the porous body. Allowing pores of the gas diffusion control 9 to have [a] bore [diameter] diameters in a range from 100 angstrom (0.01 μm) to 1 μm can cause the Knudsen diffusion around the gas diffusion control 9. The Knudsen diffusion is dependent on pressure of the measurement gas. Thereby, the cathode 4 generates an electric current value that parameterizes an oxygen concentration and a pressure. Especially, in the case of atmosphere whose oxygen concentration is known (in other words, the oxygen concentration parameter can be regarded as a known constant), an oxygen pumping current value generated can correspond to the pressure of the measurement gas substantially on one-to-one basis. Therefore, a pressure value of the measurement gas can be obtained by detecting the oxygen pumping current.

**IN THE CLAIMS:**

**The claims are amended as follows:**

1. (Amended) A gas sensor comprising:

a sensor element formed of a solid electrolyte having an oxygen ion conductivity;

a cathode and an anode, each formed of a porous metal material and each formed on the sensor element, to produce a pumping current reflecting a concentration of a detection component in a measurement gas when a predetermined voltage is applied between the cathode and the anode, the detection component comprising oxygen, the measurement gas contacting the cathode; and

[a gas diffusion control to vary] means for controlling a gas diffusion of the measurement gas in such a manner that the oxygen pumping current varies in accordance with a pressure of the measurement gas [by controlling a diffusion of the measurement gas], the measurement gas moving from a measurement atmosphere toward the cathode by way of the [gas diffusion control] means for controlling the gas diffusion, to thereby obtain information on the pressure of the measurement gas based on the oxygen pumping current.

2. (Amended) The gas sensor as claimed in claim 1, in which the [gas diffusion control] means for controlling the gas diffusion is a porous body having [a] pores with bore [diameter] diameters in a range from 0.01 μm to 1 μm.

3. (Amended) The gas sensor as claimed in claim 2, in which the diffusion which is so controlled by the [gas diffusion control] means for controlling the gas diffusion as to vary the oxygen pumping current in accordance with the pressure of the measurement gas is Knudsen diffusion.

5. (Amended) The gas sensor as claimed in claim [4] 3, in which the porous metal material of the anode is a palladium material which is one of palladium and palladium alloy.

7. (Amended) The gas sensor as claimed in claim 1, in which the gas sensor comprises a plurality of the cathodes as different pressure dependency electrodes, and a plurality of the [gas diffusion controls] means for controlling the gas diffusion, each of the different pressure dependency electrodes corresponding to one of the respective [gas diffusion controls] means for controlling the gas diffusion; in which the [gas diffusion controls] means for controlling the gas diffusion are so adjusted in terms of gas diffusion resistance as to make a difference between the corresponding different pressure dependency electrodes in terms of pressure dependency of the oxygen pumping current to be outputted; and in which the information on the pressure of the measurement gas is generated based on the oxygen pumping current outputted from each of the different pressure dependency electrodes.

11. (Amended) The gas sensor as claimed in claim 7, in which each of the [gas diffusion controls] means for controlling the gas diffusion corresponding to one of the respective cathodes is formed with a gas vent so as to introduce the measurement gas to one of the respective cathodes, and in which a diffusing power for the measurement gas is adjusted in accordance with a bore diameter of the gas vent.

12. (Amended) The gas sensor as claimed in claim 11, in which the gas vent of the [gas diffusion control] means for controlling the gas diffusion of the [first] a cathode has the bore diameter in a range from 3 μm to 3,000 μm, the outputted oxygen pumping current being less pressure dependent at the first cathode than at [the] a second cathode.

13. (Amended) The gas sensor as claimed in claim 12, in which the diffusion at the [gas diffusion control] means for controlling the gas diffusion of the first cathode is a free diffusion, and in which the oxygen pumping current detected at the gas diffusion control of the first cathode corresponds to the concentration of the oxygen of the measurement gas substantially on one-to-one basis.

16. (Amended) A sensor unit comprising a pressure sensor, the pressure sensor comprising:

a sensor element formed of a solid electrolyte having an oxygen ion conductivity;

a cathode and an anode, each formed of a porous metal material and each formed on the sensor element, to produce a pumping current reflecting a concentration of a detection component in a measurement gas when a predetermined voltage is applied between the cathode and the anode, the detection component comprising oxygen, the measurement gas contacting the cathode; and

[a gas diffusion control to vary] means for controlling a gas diffusion of the measurement gas in such a manner that the oxygen pumping current varies in accordance with a pressure of the measurement gas [by controlling a diffusion of the measurement gas], the measurement gas moving from a measurement atmosphere toward the cathode by way of the [gas diffusion control] means for controlling the gas diffusion, to thereby obtain information on the pressure of the measurement gas based on the oxygen pumping current[.],

in which the sensor unit generates and outputs information on an atmospheric pressure and an altitude based on the information on the pressure obtained by the pressure sensor.

17. (Amended) The sensor unit as claimed in claim 16, in which the pressure sensor comprises a plurality of the cathodes as different pressure dependency electrodes, and a plurality of the [gas diffusion controls] means for controlling the gas diffusion, each of the different pressure dependency electrodes corresponding to one of the respective [gas diffusion controls]

means for controlling the gas diffusion; in which the [gas diffusion controls] means for controlling the gas diffusion are so adjusted in terms of gas diffusion resistance as to make a difference between the corresponding different pressure dependency electrodes in terms of pressure dependency of the oxygen pumping current to be outputted; and in which the information on the pressure of the measurement gas is generated based on the oxygen pumping current outputted from each of the different pressure dependency electrodes.